

CHANGE IN PUBLICATION SCHEDULE:

We are giving up attempting to maintain a quarterly publication schedule, and are becoming an irregular serial. There will be four issues per volume.

VOL III NO 4

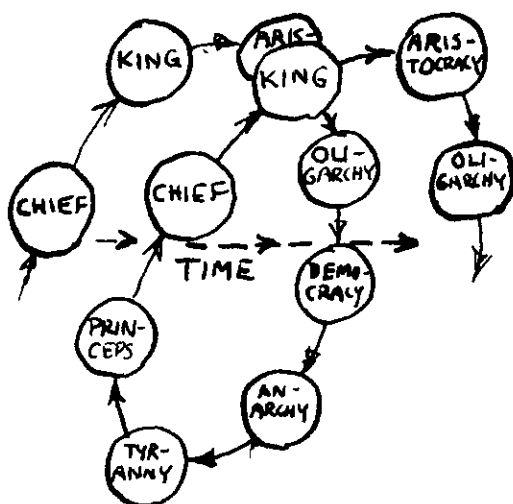
MAY 6, 1978

## COMMUNICATION THEORY in the CAUSE of MAN

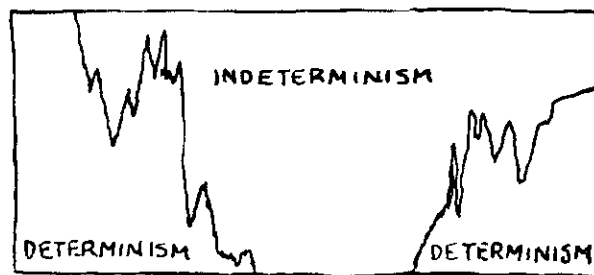
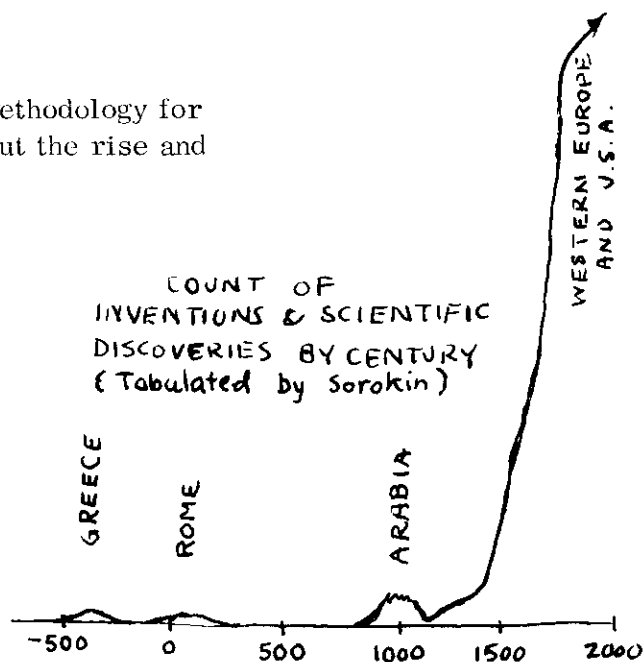
Notes on the application of General Systems Theory, Cybernetics, Information Theory, and related fields of Communication Theory to the strengthening of democratic institutions on our planet.

INSIDE THIS ISSUE:

What direction must we go to develop a methodology for integrating diverse data and theories about the rise and fall of civilizations?



Plato & Aristotle's  
City-State Cycles



CYCLIC CHANGE IN PHILOSOPHY  
(Measured by Sorokin)

Price: \$1.25 per Issue.

Update: F-24

Update F-24

COMMUNICATION THEORY in the CAUSE of MAN, P.O. Box 5095, San Jose, CA 95150  
Frederick Bernard Wood, Editor and Publisher

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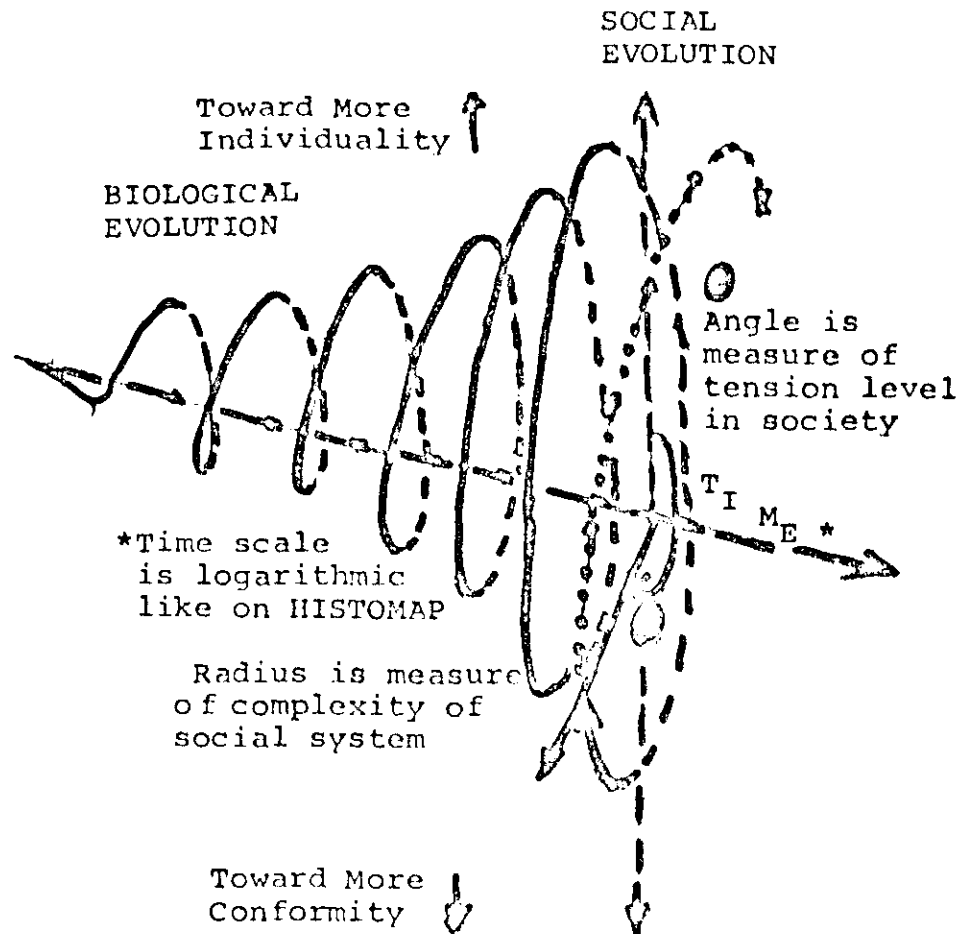
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                                 Volumes I, II, & III recollated into loose-leaf book, \$12.00

Section 3.9.7: Editorial Notes(continued).

The three diagrams on the cover of this issue of CTCM represent three types of data about sociological systems. The spiral line of Plato & Aristotle's classification of types of government of the Greek city-states represents a qualitative classification system that so far is not capable of being put down in terms of mathematical logic. The count of inventions and scientific discoveries by century is a quantitative curve of empirically observed events, subject to a small degree of fuzzyness due to some questions about how one determines whether an invention is important enough to be counted. The curve of cyclic change in philosophy is a sum of quantitative counts of qualitative value judgements of intuitive individuals.

Some engineers and philosophers have developed an intuitive feeling that these forms of data are like projections of a more complex three-dimensional spiral of development onto three different planes of observation. The helical spiral shown below illustrates such a concept.



The Helical Spiral of  
Biological and Social Evolution.

It is difficult to test this conjecture of the helical spiral of biological and sociological evolution, because as yet we do not have quantitative parameters to represent the "complexity of the social systems" and the "tension level in society". The Society for General Systems Research, founded in 1954, has through meetings and discussions based on the following aims made some progress in developing some of the concepts needed to relate the three types of data illustrated on the front cover:

- (1) To investigate the isomorphy of concepts, laws, and models in various fields, and to help useful transfers from one field to another.
- (2) To encourage the development of adequate theoretical models in fields which lack them.
- (3) To minimize the duplication of theoretical effort in different fields.
- (4) To promote the unity of science through improving communication among specialists.

Ervin Laszlo has proposed an additional aim for SGSR:

- (5) To promote and encourage the application of unified scientific knowledge in the area of concrete societal problems, for the benefit of individuals, societies, and mankind generally.

In the last twenty-three years the Society for General Systems Research has done a lot of ground work in line with the above objectives, but has never succeeded integrating the work of their own members. There seems to be a problem of inadequate communication between developers of integrative theories within the society. For example the theory of the socio-metabolic transition developed by Bryan Bergson has not been distributed with enough detail to be properly evaluated. On the other hand the publication of Edward Haskell's "Full Circle -The Moral Force of Unified Science" resulted in some political problems in connection with Arthur Jensen's association with possible misapplication of genetic theory in education and Rev. Moon's development of Unification Church sponsored conferences on the Moral Orientation of the Sciences referencing Haskell's work.

In 1935 I concluded that our country needed to develop qualified observers at the interface between the development of new technologies and their application for us to understand how new technologies impact the dynamics of the rise and fall of civilizations. I made a career path decision then to major in electrical engineering in order to be at such an interface in the future. I have found that it is sometimes difficult to communicate my observations. Although I have been trained as an engineer and scientist, I find that working at the interface between science and social application of new technologies leads to certain intuitive feelings about the development of human civilization.

I find that I have delayed publishing some of the material in this issue, because of attempting to treat more intuitive material in the way one would treat scientific studies. In scientific papers one usually publishes the results or mathematical proof of some hypothesis. Reflecting upon Axiom A.- "The researcher is himself a part of the multidisciplinary study -----" (CTCM II/4, p. 21 or Section 304, p.1) and Axiom B.- "The researcher ----- cannot separate himself from the social process ----", I conclude that I must report more of the process through which I am going, rather than waiting to report conclusions.

It is my feeling that many academic social scientists become isolated from the current critical social process, but are in a position to evaluate historical data. I feel that even academic computer scientists don't get close enough to the real application of computer technology to perceive some of the current social implications of new technology.

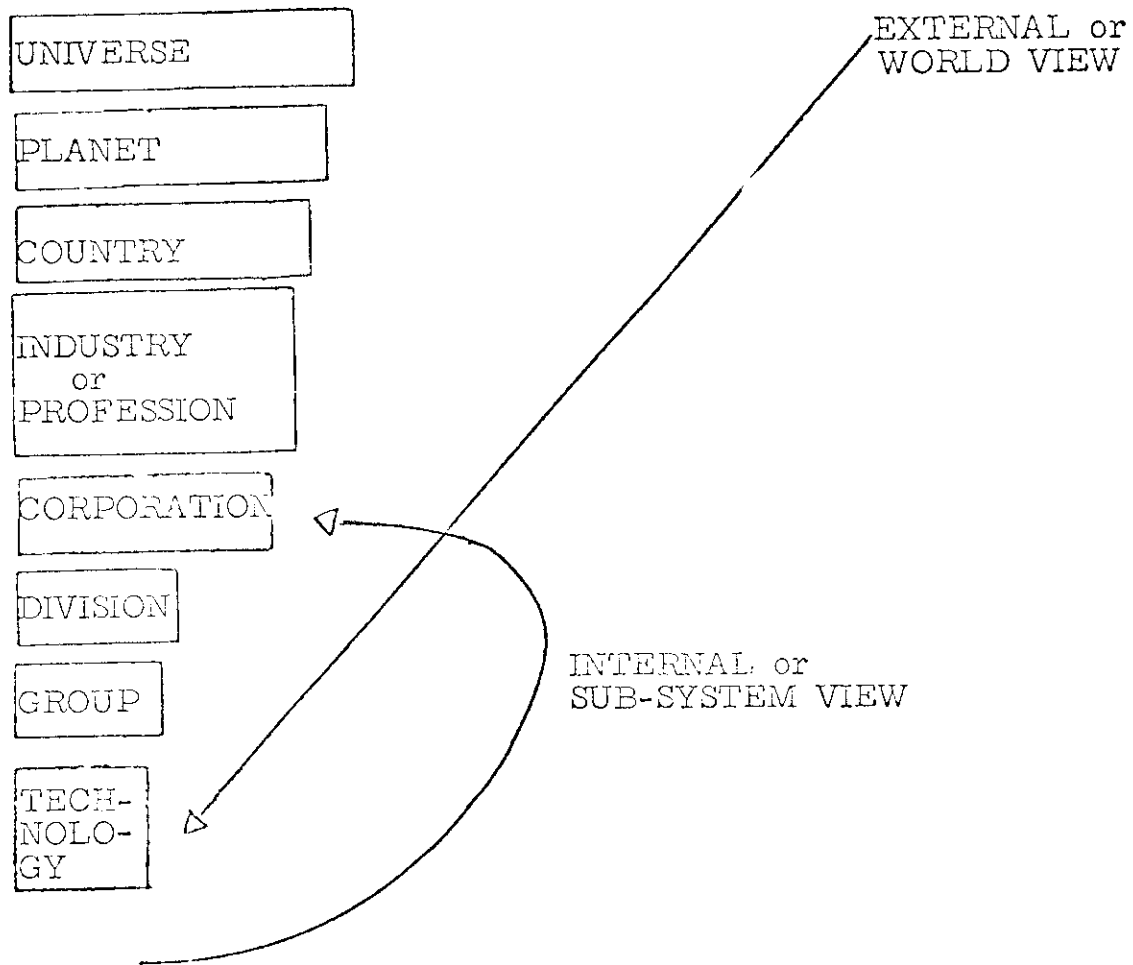
I quote the 1941 definition of an engineer from the Engineers' Council for Professional Development:

"An engineer is an interpreter of science in terms of human needs, and a manager of men, money and materials in satisfying these needs."

From my years of experience, I have concluded that for an engineer to fulfill the requirement of being "an interpreter of science in terms of human needs" that the development of four levels of perspective are required:

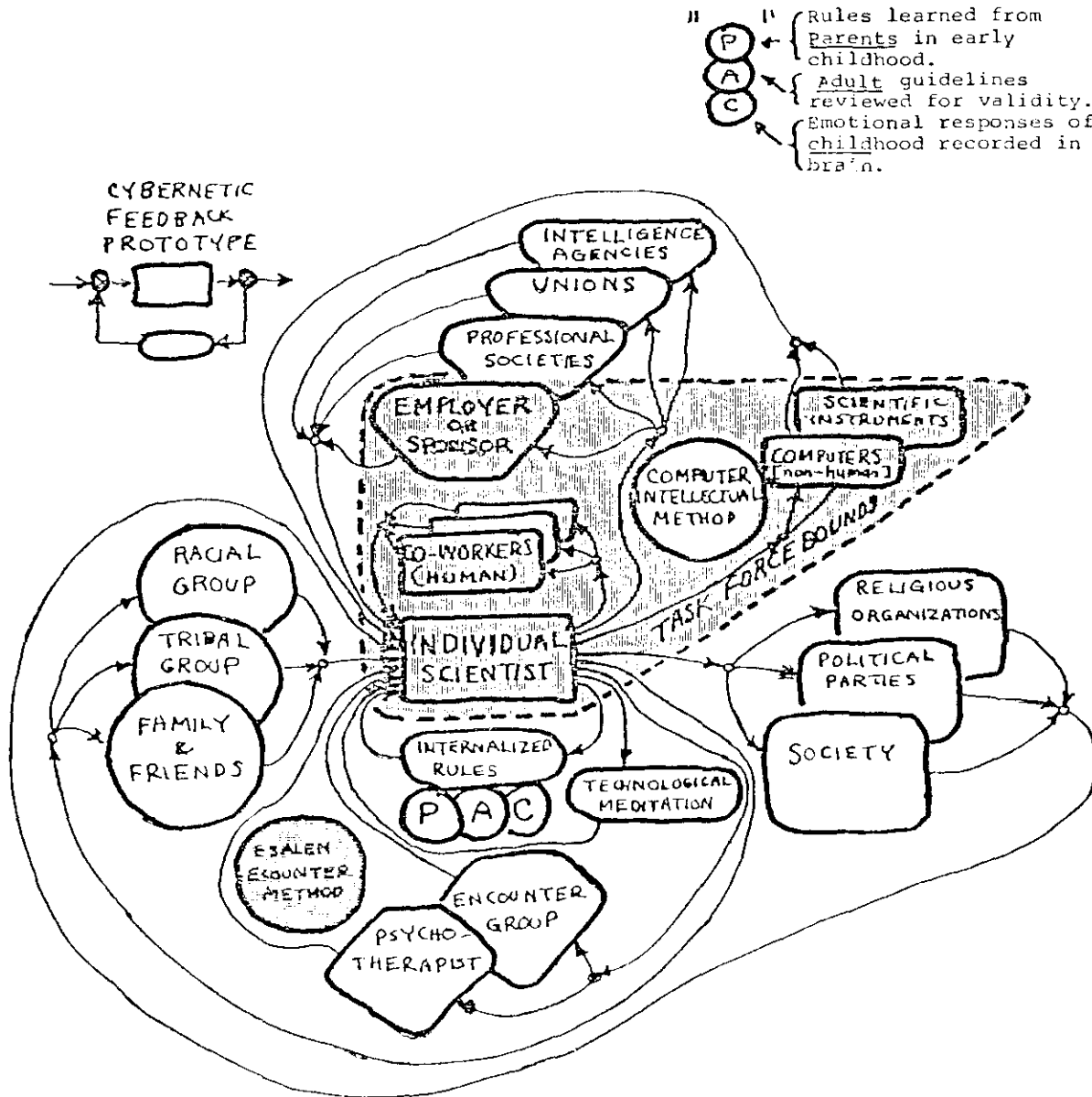
- (1) An external or world view,
- (2) An internal or sub-system view,
- (3) A perspective of what forces are working upon the individual engineer, and
- (4) A perspective of how trying to be "socially responsible" can set up pressures that can disturb the engineers family.

A sketch of the first two perspectives is shown below: ( Adapted from working paper SEPR No. 75, Problems of Civilization: Future Perspective. G/(A to T) 1/27/58, updated to 11/6/64. Details not relevant in 1978 deleted.)



The division of the universities into specialized departments sets the prototype for industry and the rest of society to set up conditions which inhibit the development of an "external or world view". This means that most multidisciplinary work has to be done evenings and weekends, i.e., not during one's regular working hours which are supposed to be devoted only to "internal or sub-system objectives."

A perspective of how the individual engineer or scientist is trapped in multiple feedback loops within the system he is trying to study is illustrated by the following diagram reprinted from "The COMPUTER and ESALEN: What Must We Do?" from Section 1.1.4 of CTCM Vol. I, No. 7-8, Jan-Feb 1971 (6/8/72).:



For a more formal statement of the implications of the above diagram, see Axioms A, B, & C in Section 3.0.4: List of Axioms in CTCM Vol. II, No. 4, Apr-June 1972(3/18/73).

The fourth level of perspective required is that one understand how work on projects relating to the "social responsibility" of engineers has to be done outside of regular working hours, and hence cuts into one's time with one's family. For the socially responsible engineer, this creates a dilemma -- how to balance his evening and weekend time between his family and problems relating to the dangers to the survival of civilization. There is no simple answer to this dilemma.



Notice to Subscribers on Publication Delays.

I have to acknowledge that due to various crises, the magazine COMMUNICATION THEORY in the CAUSE of MAN, has in reality slipped to publishing one issue per year instead of the scheduled four issues per year. I am changing from a quarterly to an irregular serial with no formal scheduled dates for publication. I am also relaxing my standards for material to be published so that these articles can be more like preliminary working papers with the expectation that feedback from readers will help make corrections for publication in later issues.

A recent review of the crises of the last four years indicates that two-thirds of the crises affecting the publication of this magazine could have been handled differently so that they would not have distracted me from carrying on the editing and publishing. Instead of struggling with each legal and/or resource problem myself, I should have searched to see how many other people were facing the same problems, and then found some way to cooperate with others to deal with the problems cooperatively.

A few months ago I visited another publisher of a small magazine and learned how he dealt with the problems delaying his publication schedule. At first I was reluctant to use his method of changing to an irregular serial, but now I am convinced that it is necessary for publishers having resources below a certain critical level.

Then I found there is an organization called COSMEP, Committee of Small Magazine Editors and Publishers, which publishes a newsletter and provides a number of cooperative services to assist small publishers. I have joined COSMEP and from reading their newsletter, I have already developed an understanding of a potential future crisis that will probably not disturb my publication plans, since I can foresee it and know that there are committees dealing with the problem.

Subscribers who have paid subscriptions in advance will have their accounts credited four issues per volume paid. Anyone who is not satisfied with the change from a quarterly to an irregular serial can have his prorated unfulfilled subscription money refunded.

*Fredrick B. Wood*

Editorial notes (continued): Letter to the Editor.

Fred,

Boston, Mass.

Read with interest your statement of the Negentropic Imperative(Magazine III/3, p.10 [Book Section 104, p. 4] ) and its explication. What you're saying ties in with much of the material which appears in Barry Commoner's latest book. Unfortunately, I don't recall the title. [\*] However, it is well worth reading with the exception of the attempt to resurrect socialism as the ultimate solution.

Sincerely,

P.C.

\* Editor's note: The title of Barry Commoner's book is The Poverty of Power. It is available in paperback and is based on a three part article series in The New Yorker, Feb. 2, 1976, pp. 38-66; Feb. 9, 1976, pp. 38-77; and Feb. 16, 1976, pp. 64-103. The hardbound edition is published by Knopf (1976) and the paperback edition by Bantam(1977).

Editor's reply:

I am pleased that what I am publishing on the concept of "entropy" ties in with what other people such as Barry Commoner are reporting. In regard to the question of promoting socialism, I feel it important to help provide tools for evaluating how well any system, whether capitalist, socialist, or what ever, serves the needs of the people. I feel that entropy-like measures can be developed for evaluating the balance between diversity and stability of a social system.

F.B.W.

Section 1.0.0B: "Blue Page" Project Summary. This "blue page" is included to help the new reader of CTCM who hasn't read the preceding issues to get a perspective of the series.

Magazine  
'CTCM'

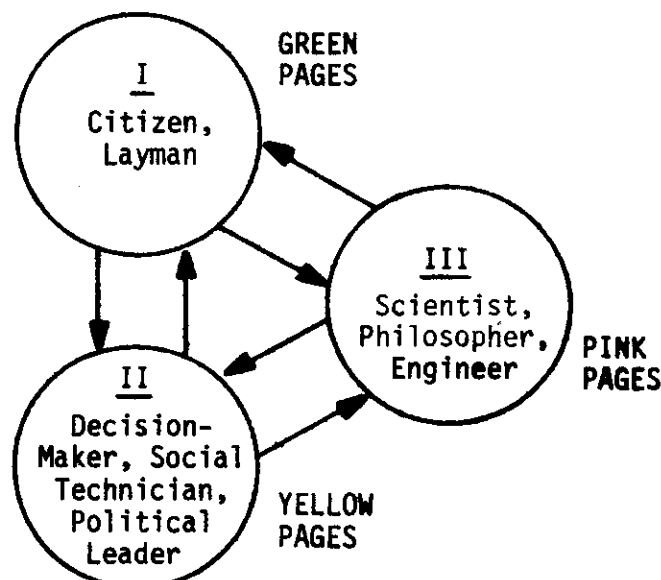
Book  
'CTCM'

This periodical is scheduled to be published quarterly and is planned so that each issue will constitute a group of sections which update the loose-leaf book, COMMUNICATION THEORY in the CAUSE of MAN. The first public edition of the book was issued in October 1973 and consisted of Volumes I and II of the magazine, CTCM, rearranged in "file number" sequence. The object of both the book and the magazine is to provide some tools from the mathematical and engineering theory of communication, and in particular from Cybernetics and Information Theory, to help the layman find some ideas by which he can more easily determine his course toward a more democratic society.

Each page is labelled with the volume and issue numbers of the magazine, CTCM, and with the "file numbers" of the book. Thus one may rearrange the pages of the cumulated magazine issues by file numbers to put the sections in the order of the loose-leaf book.

Citizen? and/or Decision-Maker? and/or Scientist?

Who is going to benefit from research in General Systems Theory, Cybernetics, and Information Theory? Are these fields of science and engineering going to be used for the benefit of all mankind? Or are they going to be used primarily for the private benefit of particular ruling classes? How do we insure the use of such knowledge in the interests of strengthening democratic institutions? I have an intuitive feeling that to protect the interests of the people, some way must be found to combine general articles, technical applications articles, and basic scientific articles into the same journals and books, while maintaining proper labels as to the nature of the different sections. The three groups of readers are illustrated by the following diagram:



For the benefit of the new reader who has not followed the earlier issues, an abridged outline of the projected loose-leaf book is displayed below. For a more detailed outline and listing of which sections have been printed to date, see CTCM, Vol. II, No. 6-A, pp. 11-21 (Section 1.0.1).

Short Outline of the Proposed Book

COMMUNICATION THEORY in the CAUSE of MAN:

Book One: Interpretation of Cybernetics, Etc., for the Layman-Citizen

- 1.0 Background Material and Basic Concepts
- 1.1 General Introduction
- 1.2 Analogies in Sociological Problems from the Technical Level
- 1.3 Problems on the Semantic Level
- 1.4 Problems on the Effective Level
- 1.5 More Complex Problems
- 1.6 An Integrative Framework for a New Frontier

Book Two: Application of Principles of Information Theory, Etc., to Practical Problems for the Social Technician and Systems Engineer

- 2.1 Implications of Multidisciplinary Concepts
- 2.2 Application of Cybernetic Technologies
- 2.3 Applications for Implementing Ethical Principles
- 2.4 Theories of Social Evolution
- 2.5 Stimulation of Creative Evolution in Human Society
- 2.6 Application of Cybernetics to Human Communication Problems

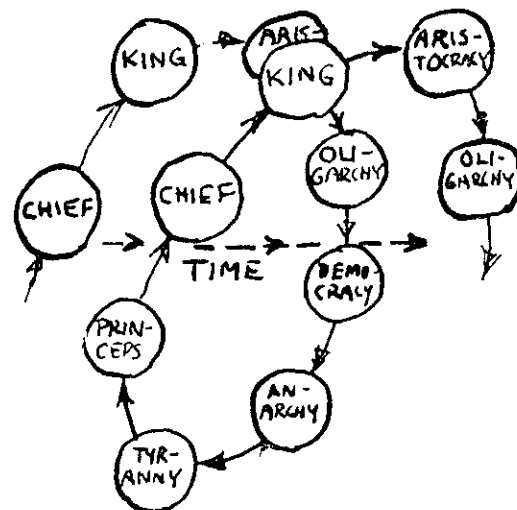
Book Three: Mathematical and Scientific Background for the Philosopher and Scientist

- 3.1 Mathematical Concepts
- 3.2 Sample Calculations
- 3.3 Status of Entropy and Information
- 3.4 Information Theory
- 3.5 Cybernetics
- 3.6 Simulation
- 3.7 Physical Science
- 3.8 Glossary
- 3.9 Bibliography, Notes & Index

Section 1.5.1: A Conjecture on the Stability of Social Systems.

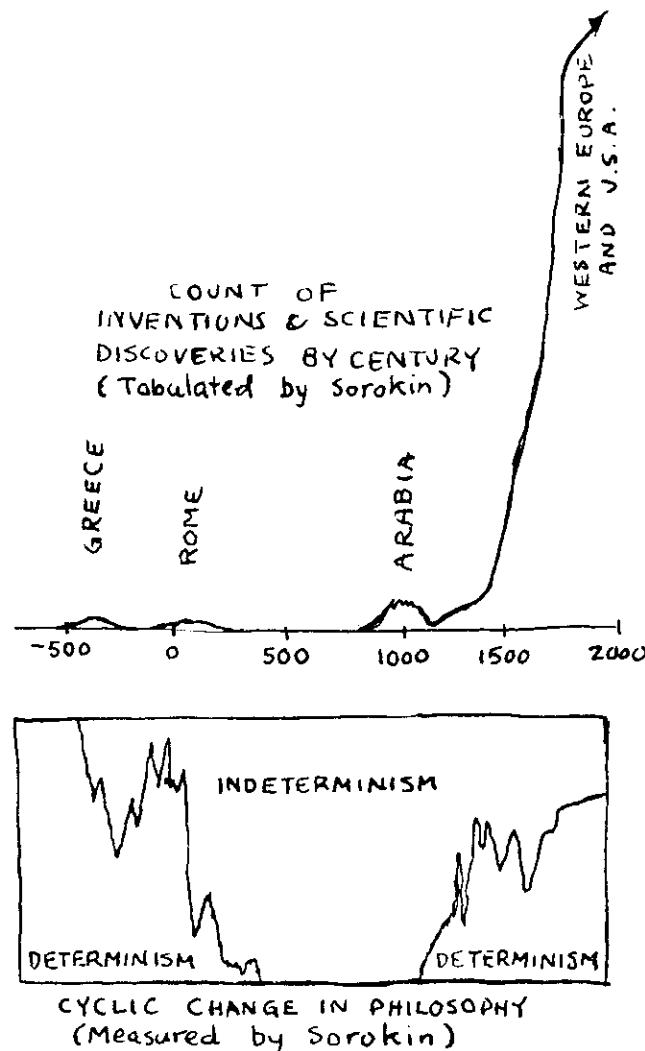
The ancient Hindus perceived civilization as going through cyclic changes of fixed periods closely related to astrological observations of the movements of the stars in the sky. I believe that their time constants were far from accurate, but that they were qualitatively right in observing cycles. For more details see Section 3.8.3.

Plato and Aristotle observed more specific cycles in the political organization of the Greek city-states. The observations of Plato and Aristotle are illustrated in sketch below.



Plato & Aristotle's  
City-State Cycles

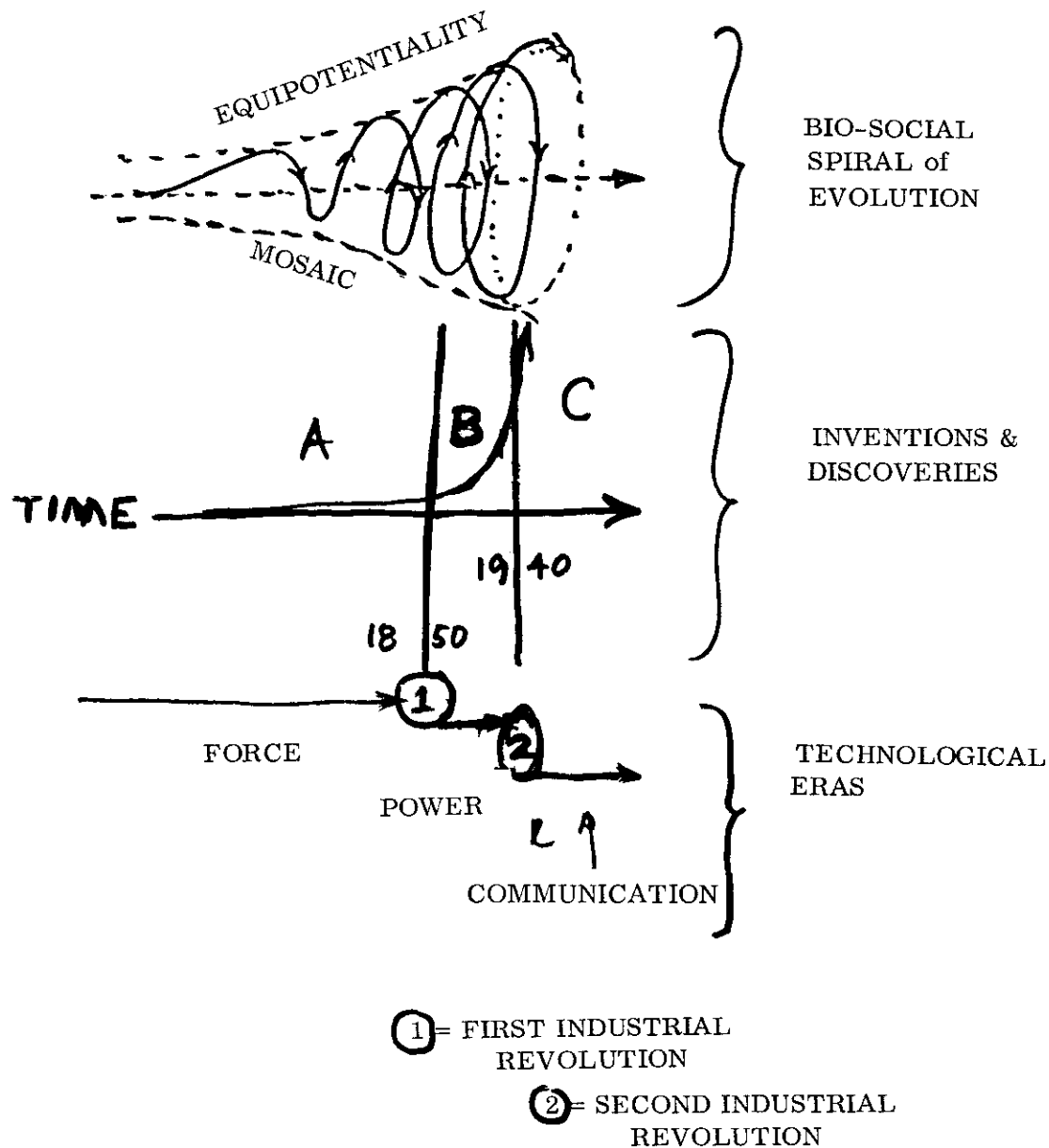
In 1934 the sociologist, Pitirim A. Sorokin, published data on cyclic changes in trends in philosophy in Western Civilization over a period of 2000 years. He also published curves and tables of scientific inventions and discoveries per century for the same period. Some of his data are abstracted in the curves on the next page. If we think of the Hindus cycles with an appropriate correction of the time constants as relating to a period of less than one scientific discovery per century, and the Greek political cycles relating to a period of 60 discoveries per century, and the worldwide political and economic crises of 1914 to 1978 being related to a period of 100,000 scientific discoveries and inventions per



century, then it is plausible that these three sets of curves are projections of a three-dimensional spiral which we don't accurately know yet. I do not propose this spiral as a deterministic law, but a complex resultant of many as yet not understood factors. If we understood the factors contributing to such a spiral, we could make intelligent decisions affecting the future path of our civilization. Perhaps the current period should be broken into two parts: one centering about 1850 with a discovery rate of 10,000 inventions per century and a second centering around 1940 with a discovery rate of 200,000 inventions per century.

So far I have not been able to find any sociological data that extends Sorokin's curves into the present with compatible definitions. In the absence of accurate data, I make the conjecture that the first and second industrial revolutions are similar turning points in the hypothetical spiral of bio-social evolution.

A first approximation to such an explanation is illustrated below:



NOTE

Blank pages are used where necessary to permit separation of section for collating cumulative sets of the magazine into loose-leaf book form.

Section 2.0.1: A Metaphorical Description of the Critical Path of Civilization.

Although we do not yet understand the dynamics of the development of civilization, we can make certain analogies in our intuitive thinking. The more complex human civilizations are fragile. It is almost analogous to a stunt pilot of a small airplane trying to loop through a series of steep valleys in a range of gigantic mountains such as are shown below. (Fig.1)



Fig. 1

A metaphorical path of such an airplane is shown on the next page. The path of the airplane is shown spiralling through the mountain valleys. If the pilot miscalculates the desired path at the last mountain on the left and falls into path A, he may crash at the base of the mountain A'. If he climbs too steeply, he may flip over into path B and crash in the foothills at point B'. If he can navigate the optimum path C, he may make it through the obstacles safely out of the mountains on path C'. Fig.2

I have attended two conferences on the HOLOCAUST sponsored by the National Council of Christians and Jews in San Jose, the first in February 1977, and the second in March 1978. I feel that it important that the historical facts about the destruction of six million Jews by Nazi Germany be remembered. However I feel that a more theoretical analysis of the dynamics of civilization is needed to be able to understand how Germany, the most advanced in science and the arts, in one generation returned to a barbaric condition. In effect Hitler was taking European civilization on a collision course like path A-A' in Fig. 2. Hitler



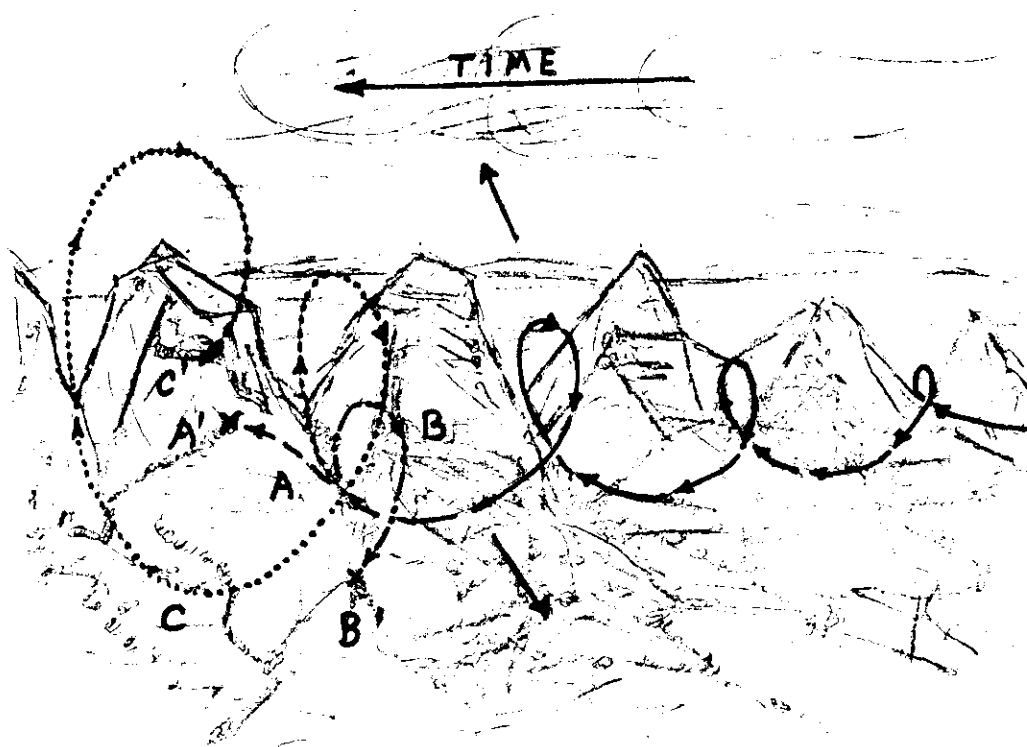


Fig. 2

talked of setting a straight line course for Nazi Germany for 1000 years, in complete contradiction with the lessons of history and the interpretations of the ancient Hindus, Greek philosophers like Plato and Aristotle, and modern sociologists like the late Pitirim A. Sorokin.

If we return to our metaphorical concept of the critical path of civilization, and remove the background of the mountains, we then have the curve in yet undefined coordinates in figure 3. here we see that plans that deviate too far from the critical path crash like the two paths marked "X" in Figure 3.

It is plausible that eight successive civilizations came close to the critical spiral but crashed when they unknowingly deviated too far from the critical path as is illustrated by the hypothetical civilizations A, B, C, D, E, F, G, and H in Fig.4.

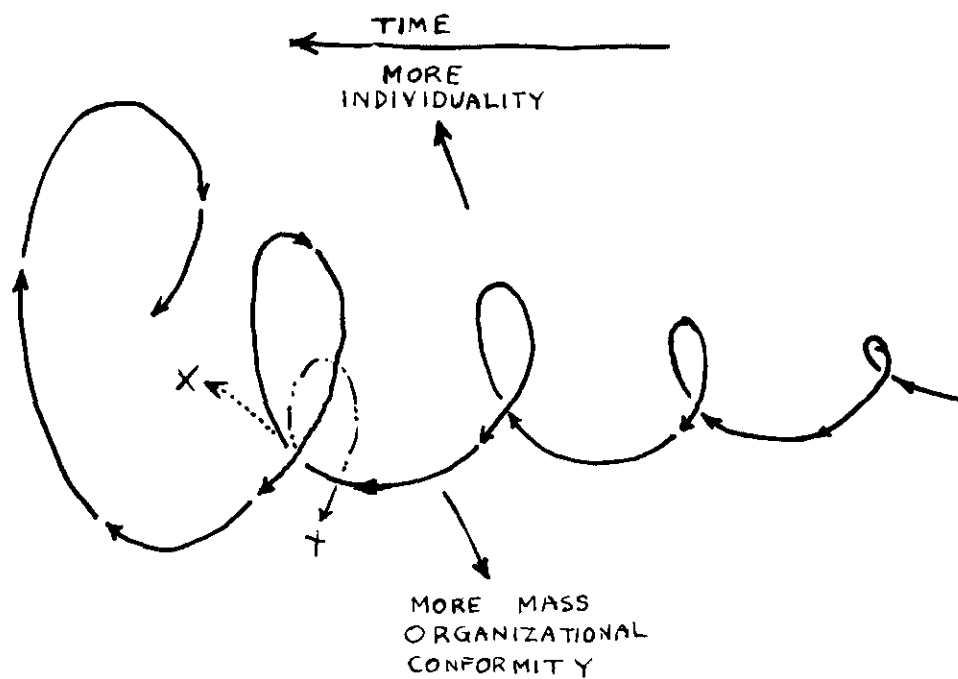


Fig. 3

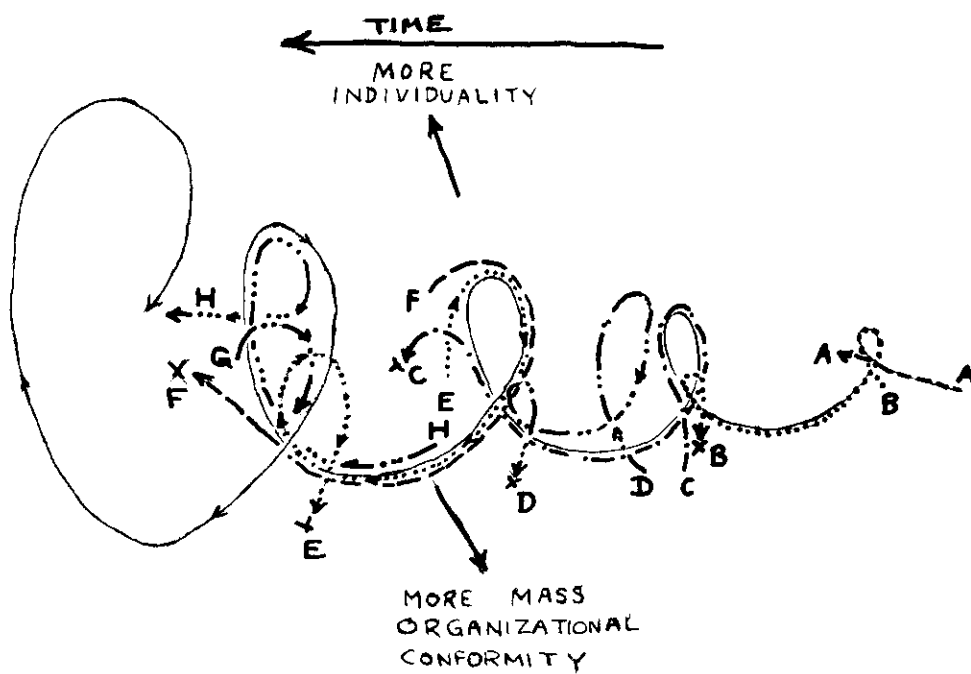


Fig. 4

APPROXIMATE CLASSIFICATION OF GENERAL SYSTEMS THEORIES		
<p>(1) LOGICALLY and or mathematically COMPUTABLE hypotheses associated with the LEFT hemisphere of the brain.</p> <ol style="list-style-type: none"> <li>1. Karl Marx's economic theory.</li> <li>2. Kalecki's model of the capitalist economic system.</li> <li>3. Leontief's matrix representation of Input-Output economics.</li> <li>4. Keynes' economic theory.</li> <li>5. Klein-Goldberger simulation of an economic system.</li> <li>6. Rashevsky's development of mathematical biophysics.</li> <li>7. Forrester &amp; Meadows world model simulations.</li> <li>8. K. Watt's analysis of possible world crises.</li> <li>9. F. Kile's Regional World III Simulation Model.</li> </ol>	<p>(2) EMPIRICAL studies involving both DETERMINISTIC and PROBABILISTIC features of the ENVIRONMENT.</p> <ol style="list-style-type: none"> <li>1. Henry Adams' analysis of democracy and entropy of social systems.</li> <li>2. Sorokin's empirical study of cycles in civilization.</li> <li>3. J. G. Miller's LIVING SYSTEMS</li> <li>4. F. B. Wood's negentropy of social systems.</li> <li>5. George Lamb's thermodynamic potential for social change.</li> <li>6. Troncale's "Hierarchies by the Action of Systems Field Axioms."</li> <li>7. Piel's "Acceleration of History"</li> </ol>	<p>(3) INTUITIVE thematic hypotheses involving the ARTISTIC-POETIC functions of the RIGHT hemisphere of the brain.</p> <ol style="list-style-type: none"> <li>1. Cycles of civilization of ancient Hindus.</li> <li>2. Plato &amp; Aristotle's observed cycles of political form of city-states.</li> <li>3. Auguste Comte's evolution of Sociology.</li> <li>4. Marx &amp; Engels dialectical materialism.</li> <li>5. Teilhard de Chardin's concept of the developing Noosphere.</li> <li>6. Haskell's periodic table based Unified Science.</li> <li>7. B. Bergson's periodic table based Combination-Separation Principle.</li> <li>8. S. Dodd's epicosm models.</li> <li>9. Fred Hoyle's "Everyman's Universe" in <u>Ten Faces of the Universe</u>.</li> </ol>

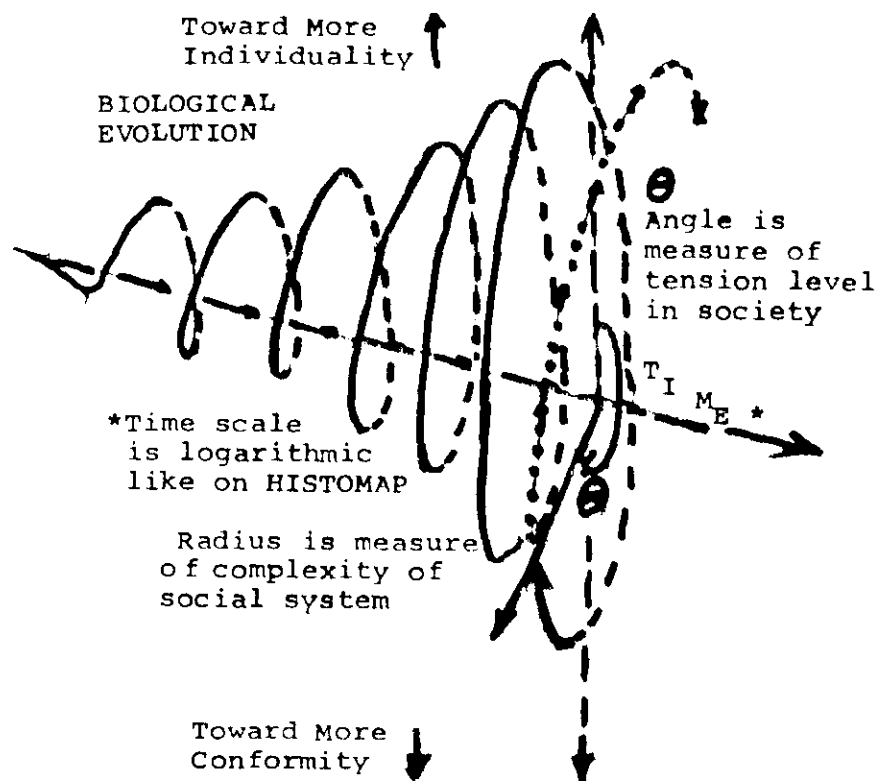
In this section I have attempted to make a first approximation to putting various theories and observations into one of the above classes. At this stage I put James G. Miller's Living Systems in class (2), even though there is much material in his book that relates to class(1).

My concept of the methodology that can be developed is that we can develop constructive cooperation between people using or developing theories in two or more of the three columns.

Section 2.2.1: Basic Assumptions on the Application of Cybernetic Technologies  
to the Understanding of Social Systems.

CRITICAL  
PATH OF  
EVOLUTION

- (I) There is some critical path about which the evolution of human civilization must stay close or else the present leading countries will collapse, leaving the evolution of civilization to be carried on by some other culture.



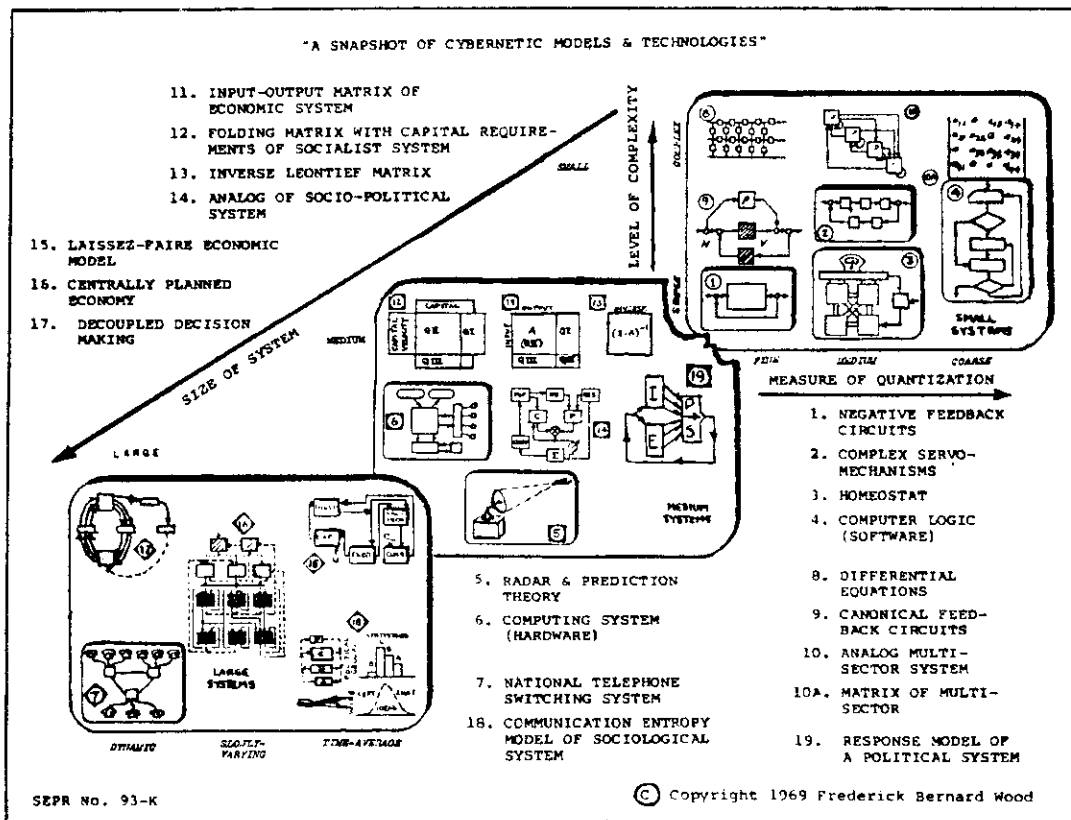
COLLAPSING  
COUNTRY CAN  
DESTROY LIFE  
BY RADIATION

(II) The problem is compounded in that the major countries can destroy human life on this planet in the process of their societies collapsing. This means that we cannot be satisfied with letting a major power collapse like the disintegration of ancient Rome. A collapsing civilization must either be brought down gently or transformed to get it on the critical path of successful evolution to the next stage of more human organization. Since the development of atomic fission bombs and hydrogen fusion bombs, a collapsing major country could trigger a nuclear war that could contaminate the biosphere with sufficient radioactivity to destroy human life on this planet.

Then I add two hypotheses on how we can solve these problems:

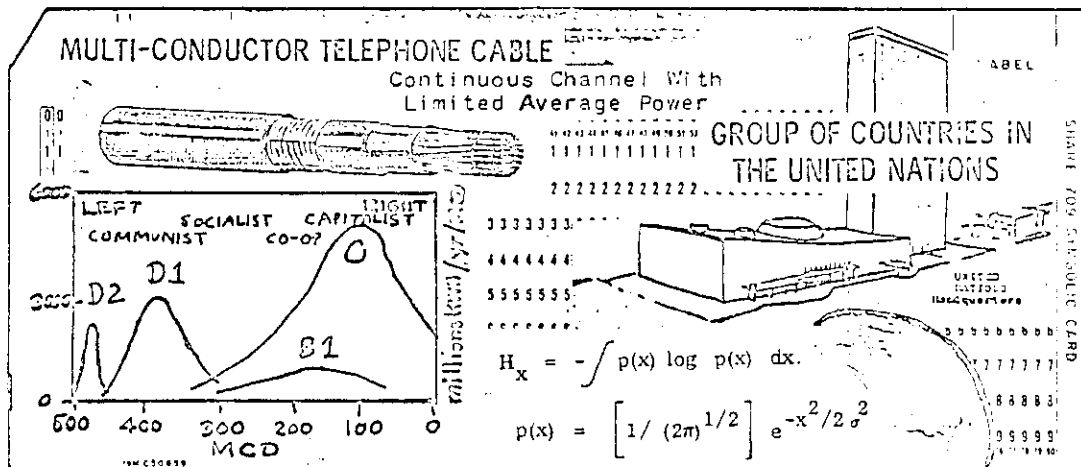
HOMEOSTATIC  
CYBERNETIC  
FEEDBACK  
LOOP SIMULATION

(III) The most fundamental approach to understanding the social problems of the world is the cybernetics feedback loop or homeostatic approach. This approach will gradually be extended by various simulation techniques using computers as a prime tool. This approach has some drawbacks in that many of the human factors are difficult to simulate in a formal way, so that there is danger that simulations may omit important factors.



ENTROPY-LIKE  
PROPERTIES OF  
SOCIAL SYSTEMS

- (IV) There is a complementary method, namely that of estimating the values of entropy-like properties of the social systems. These techniques may give fuzzy answers, but will tell us whether we are going in the right direction. Attempting to define entropy-like properties of social systems brings into focus the necessity for equivalent completeness theorems which remind us not to forget the more subtle human factors.

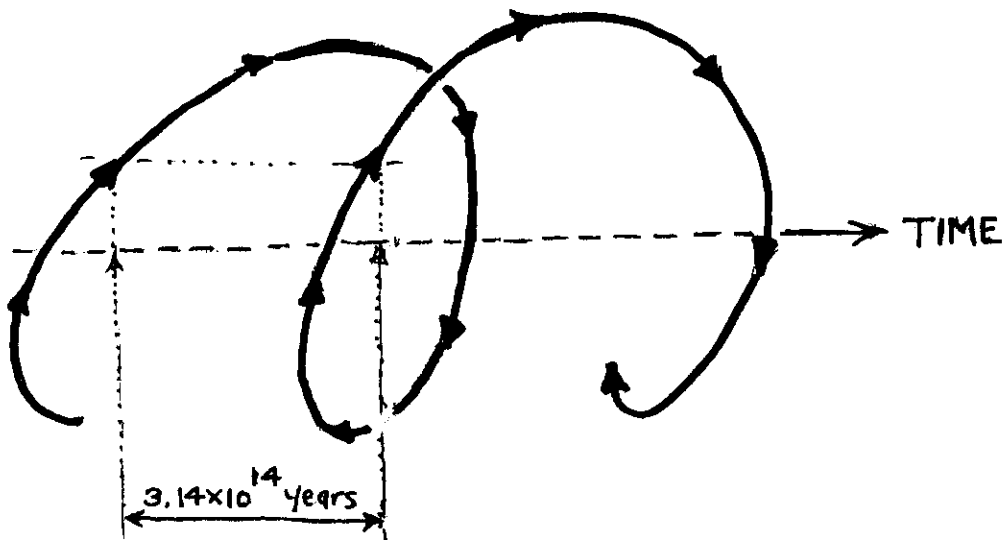


Use of the integral form of the equations for measuring the communication entropy of telephone signals on a telephone cable to estimate a measure of "dynamic-justice" of a country by calculating the negentropy of the distribution of political ideas tolerated in the country.

Section 3.8.3: Social Evolution and Exponential Curves  
from an Intuitive Cybernetic Viewpoint.

The illustrations in this section are presented here with fragmentary commentary with the intent of including more explanation in future issues of CTCM. These illustrations were used in the presentation of a paper at the Society for General systems Research, Annual Meeting of the Far West Region, Portland, Oregon, September 14-15, 1972, under the title: "A Second Order Approximation to a World System of Nations Based on a Continuous Channel Model from Information Theory." ( For abstract, see CTCM II/3, pp. 23-24 or Section 234 or SEPR 405)

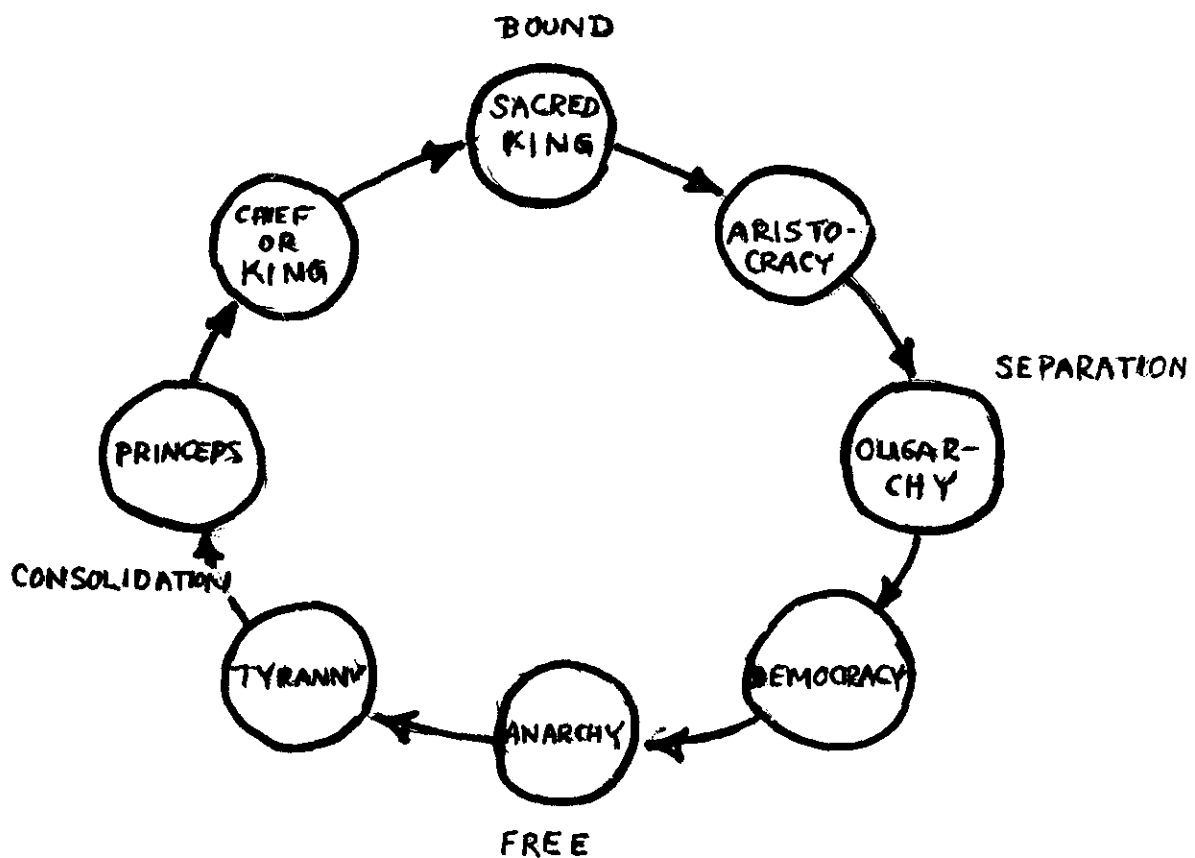
ANCIENT HINDU PHILOSOPHERS=  
SOCIETY GOES THROUGH CYCLES



314,000,000,000,000 YEAR CYCLE

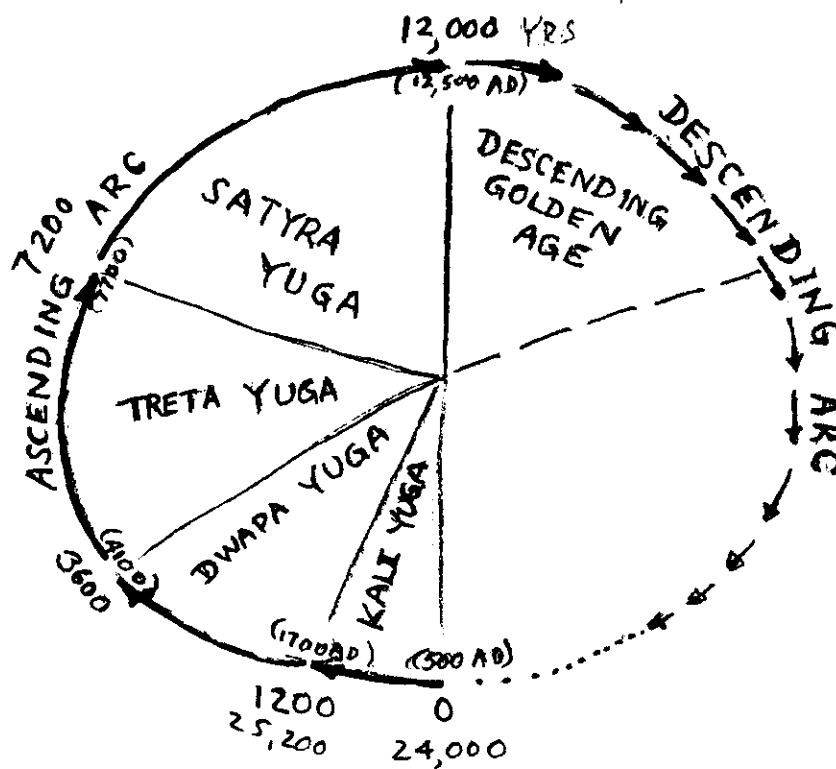
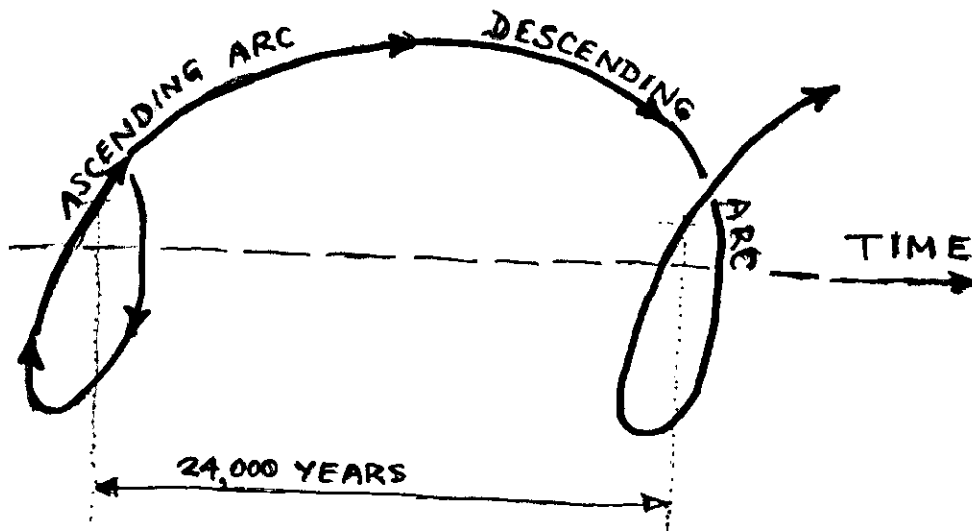


ARISTOTLE'S CYCLE =  
(ADAPTED from H. KAHN  
WITH CROSS REF. TO BRIAN BERGSON)  
(GREEK CITY-STATES)



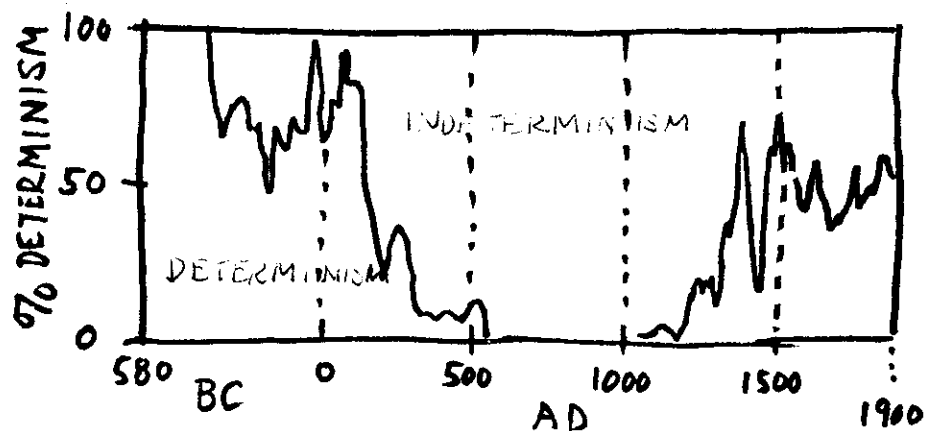
MORE RECENT HINDU PHILOSOPHERS =

MORE REASONABLE TIME SCALES  
(adapted from SRI YUKTESWAR)

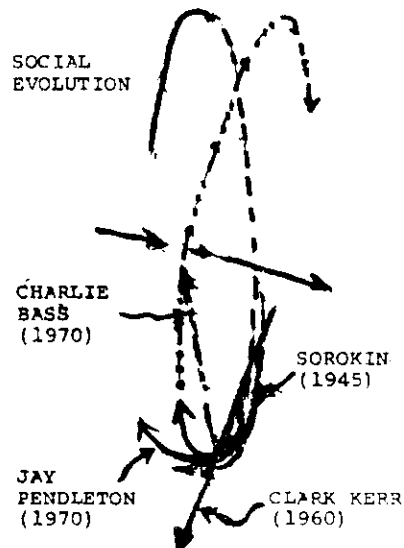
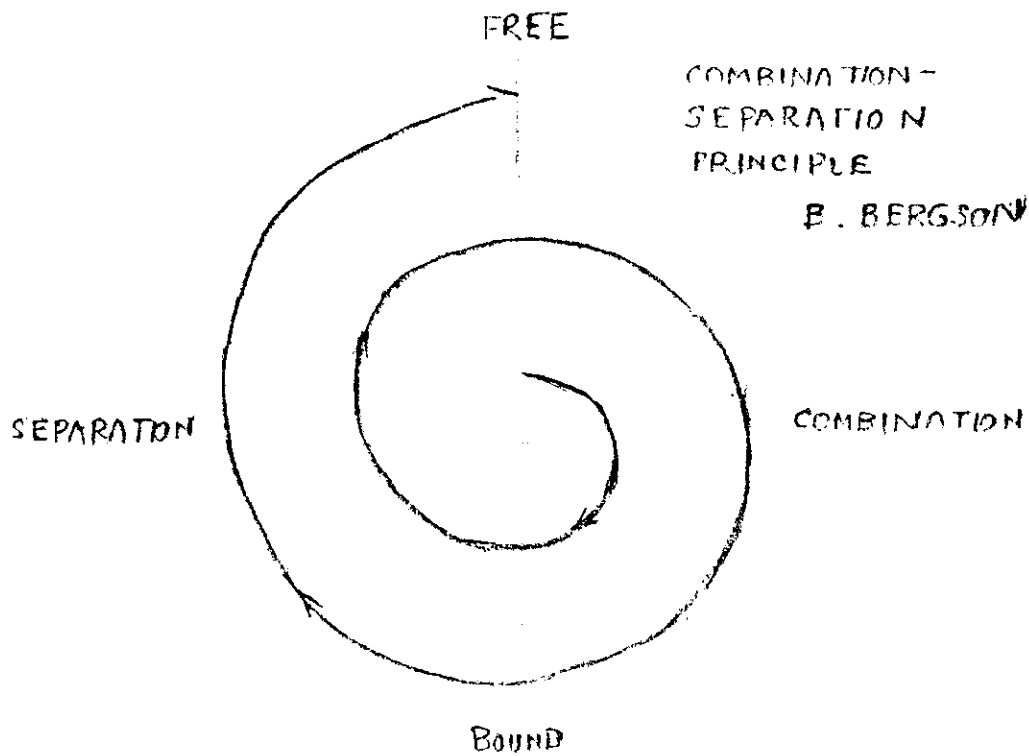


## CYCLES IN PHILOSOPHY

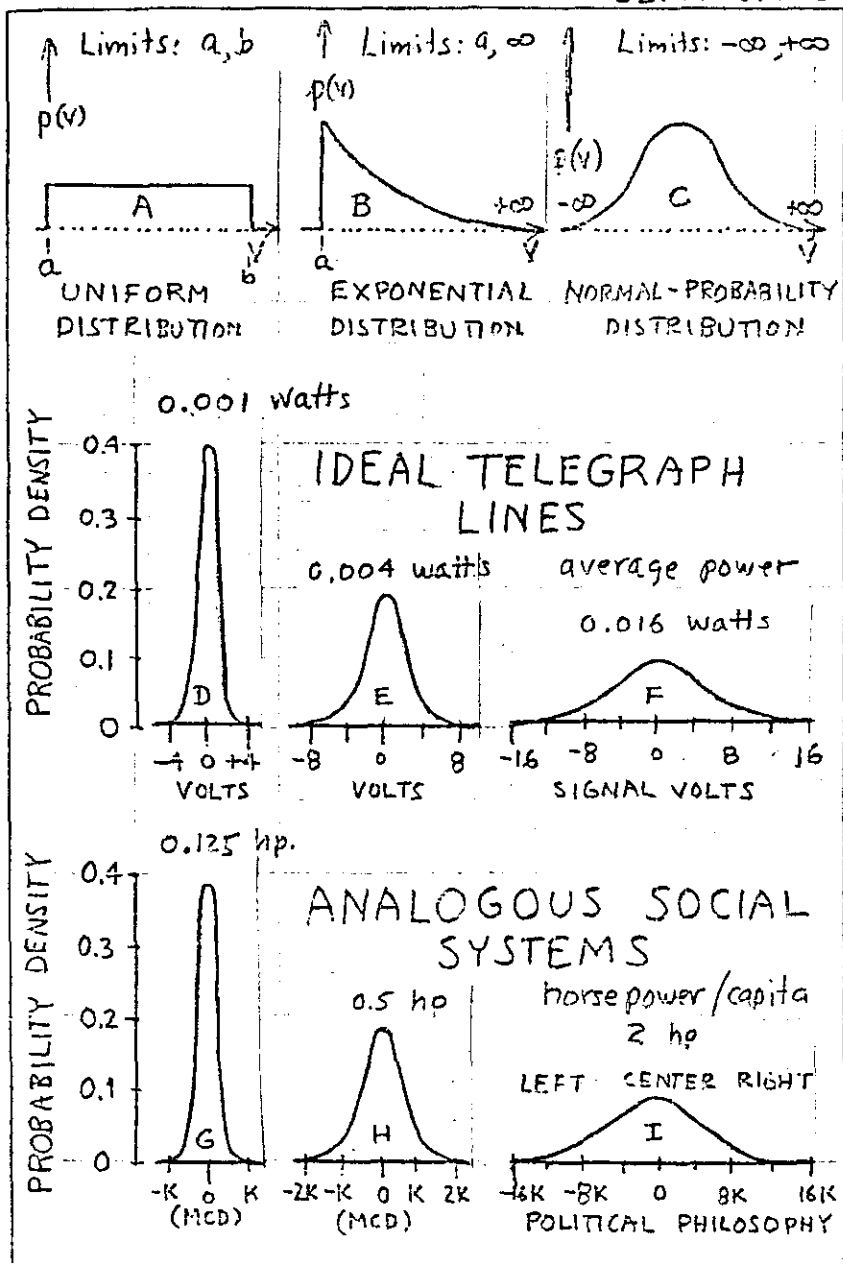
*Adapted from Sorokin*

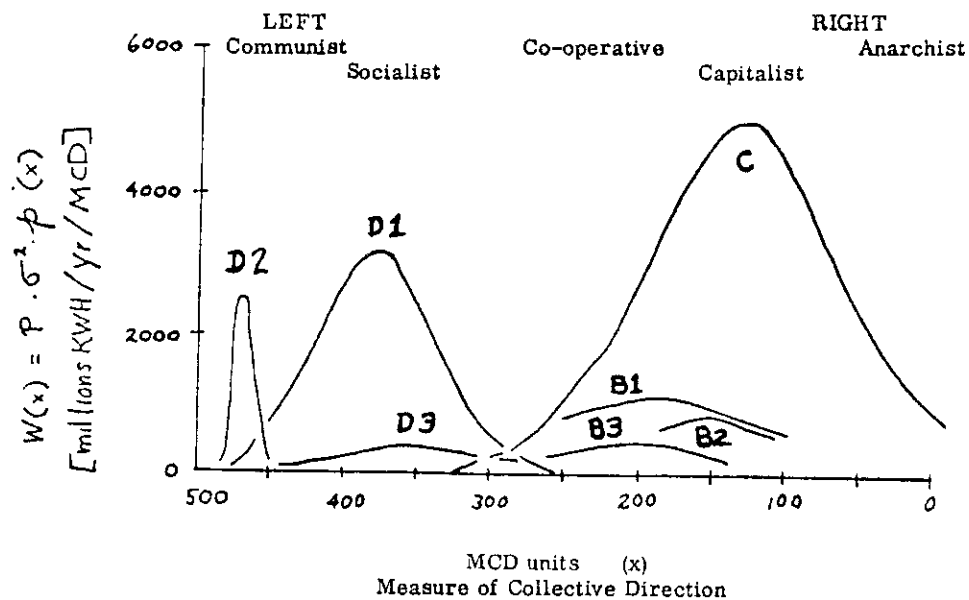


An important question to examine is whether curves like the above might be projections on a two-dimensional plane from a three-dimensional spiral curve of social evolution.



SEPR No. 138





Ideal Distribution Curves of Power versus Political Ideas for  
Some Hypothetical Countries.

Section 3.9.2: Bibliography on General Systems Theory.

1950

Norbert Wiener, The Human Use Of Human Beings, (Cybernetics and Society), Cambridge: Houghton Mifflin Co. (1950), 241 pp.

1962

Richard I. Meier, A Communication Theory of Urban Growth, MIT Press(1962), 184 pp.

1964

Oliver C. Cox, Capitalism as a System, New York: Monthly Review Press(1964), 367 pp.

1966

Charles R. Dechert, The Social Impact of Cybernetics, Univ. Of Notre Dame Press(1966), 266 pp.

Alice Mary Hilton, editor, The Evolving Society - First Annual Conference on the Cybercultural Revolution -- Cybernetics and Automation, New York: The Institute for Cybercultural Research, 225 East 63rd St., New York, NY 10021

1968

Walter Buckley, editor, Modern Systems Research for the Behavioural Scientist, Chicago: Aldine Publishing Co.(1968), 525 pp.

C. West Churchman, The Systems Approach, New York: Dell Publishing Co. (1968), 243 pp.

Ludwig von Bertalanffy, General System Theory, New York: George Braziller (1968), 289 pp.

Bryan P. Bergson, "The Theory of the Socio-Metabolic Transition," pamphlet, 4 pp, 15000 Jeanette Lane, San Jose, CA 95127.

William Gray, Frederick J. Duhl, and Nicholas D. Rizzo, General Systems and Psychiatry, Boston: Little Brown & Co.(1969), 481 pp.

1972

Bryan P. Bergson, "The Combination-Separation Principle," Conference paper, 37 pp., Society for General Systems Research, Western Regional Conference, Portland, Oregon, Sept. 1972.

Edward Haskell, editor, Full Circle - The Moral Force of Unified Science, New York: Gordon and Breach(1972), 256 pp.

Ralph Parkman, The Cybernetic Society, New York: Pergamon Press(1972), 396 pp.

Gerard Piel, The Acceleration of History, New York: Alfred A. Knopf(1972), 369 pp.

#### 1973

Jay W. Forrester, World Dynamics, Cambridge: Wright-Allen Press(1971, 1973), 144 pp.

#### 1974

Stafford Beer, Designing Freedom, London: John Wiley & Sons(1974), 100 pp.

Kan Chen, editor, Technology and Social Institutions, New York: IEEE Press (1974), 212 pp.

Ervin Laszlo, A Strategy for the Future, New York: George Braziller(1974), 238 pp.

Kenneth E. F. Watt, The Titanic Effect - Planning for the Unthinkable, Stamford, Conn.: Sinauer Associates(1974), 268 pp.

Holocaust, Jerusalem: Keter Publishing House(1974), 214 pp., compiled from material originally published in the Encyclopaedia Judaica.

#### 1975

R. Buckminster Fuller, Synergetics - Explorations in the Geometry of Thinking, New York: Macmillan publishing co.(1975), 876 pp.

Stafford Beer, Platform for Change, London: John Wiley & Sons(1975), 457 pp.

#### 1976

David Berlinski, On Systems Analysis, Cambridge: The MIT Press(1976), 185 pp.

#### 1978

James Grier Miller, Living Systems, New York: McGraw-Hill Book Co.(1978)



Section 3.9.6: Questions(Continued):

Question 26: A reader of CTCM has asked two questions about my statement in in CTCM Vol. I, No. 9, p. 11, March 1971 [Book Section 231, p. 1]:

"Therefore for two reasons I decided to major in electrical engineering:  
(1) to keep my feet on ground where one could verify facts and test hypotheses -- such as in engineering, where one can build electronic circuits to test one's theories, and  
(2) to be at the right place in our social system to be able to observe the impact of new technology on social processes."

Question 26A: Has your decision made in 1935 to major in electrical engineering turned out to be valid on the basis of your forty-two years experience since then? Have you observed phenomena or developed concepts earlier than they have been developed in the traditional social sciences?

So far the concept that our civilization needs people at the interface between the development and application of new technology to be able to observe the social significance appears to be valid. However the problems of communicating what is observed to the appropriate social scientists and to the citizens have been only partially solved. See Question 28 in regard to the needs of church organizations who wish to understand the ethical issues in regard to the application of new technology. See Section 2.0.2 for indications of how an engineer at the interface between the new technology and its social application can be of help in promoting communication between the logical systems theory builders and the intuitive thinkers.

Question 26B: If the social sciences have advanced social theory without the benefit of your observations as an electrical engineer, then of what practical value is the continued development of the magazine CTCM ?

If the social scientists have already advanced beyond what is being developed in CTCM, the magazine can shift to explaining social theory to the layman and technician.

Question 27: At a Unitarian Church discussion group some time ago a participant asked me "Do you really use the concept "Entropy" in your computer-communications work at IBM?"

My answer then was "yes.\* My work in computer processing of images involves computing the "entropy" of images to determine the theoretical maximum compression possible as a reference standard to compare practical computer image compression algorithms.

\*Note: Since then my job assignment has changed such that my current work does not involve such critical efficiency problems requiring pushing the algorithms close to the entropy limit.

Question 28: Through what stages of education and experience can a church organization develop competence to judge ethical issues in respect to complex organizations using high technology?

I perceive four stages that a church organization must go through to develop the competence to judge such issues:

(1) They must first become acquainted with the routine business uses of the new technology, particularly as it is used in large complex organizations.

A vehicle for developing this competence is for the church to develop its own computer programs for processing its membership lists and financial records.

(2) Then they must learn enough about general systems theory to be able to understand computer simulation of social and political systems.

To prepare for this stage, a church organization must choose a computer system for its elementary membership processing that has suitable compilers available so that they can move on from processing membership lists and financial data to writing system simulation programs.

(3) Then they must expand their experience with computer technology to be able to duplicate simulation runs used by the Club of Rome.

To achieve this step they must have available the DYNAMO compiler used by Jay Forrester or equivalent. It is important that a church organization doesn't get trapped into using a limited computer system that cannot be expanded upward to handle simulation jobs.

(4) The next step is for a church organization to develop the capability to explain systems to the layman.

To reach this stage church organizations may have to develop the concept of the "Social Planetaria" proposed by Dr. Lasswell at the Western Joint Computer Conference in 1958.

(5) A church organization could be better prepared to evaluate the ethical implications of new high technology, if they experimented with some of the new technology in their organizational decision-making.

As an example the council of a local church could experiment with computer conferencing as an aid to decision-making, provided they could get a foundation grant or government grant for the computer terminal rental costs.

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Part way thorough volume III the magazine was converted from a quarterly to an irregular serial. Four issues are planned for each volume, but there will no longer be a direct correlation between volume number and calender year.

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